

**Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services**

STATEMENT OF BASIS

**PYR/NVP/PVP/PVP-I Plants
BASF Corporation – Geismar Site
Geismar, Ascension Parish, Louisiana
Agency Interest Number: 2049
Activity Number: PER20060028
Proposed Permit Number: 2039-V1**

I. APPLICANT

Company:
BASF Corporation
P.O. Box 457
Geismar, Louisiana 70734-0457

Facility:
PYR/NVP/PVP/PVP-I Plants
BASF Corporation – Geismar Site
8404 River Road (Highway 75)
Geismar, Ascension Parish, Louisiana
Approximate UTM coordinates are 693.04 kilometers East and 3,342.28
kilometers North, Zone 15

II. FACILITY AND CURRENT PERMIT STATUS

BASF Corporation (BASF) operates a chemical manufacturing complex in Geismar, Ascension Parish, Louisiana (the Geismar Site). The Geismar Site has been divided into a number of operating areas for the purpose of obtaining Part 70 Operating Permits: the Chemical Intermediates–North/Diols Complex which includes 1,4-butanediol (1,4-BD), gamma-butyrolactone (GBL), n-methyl pyrrolidone (NMP), tetrahydrofuran (THF), and polytetrahydrofuran (Poly THF) plants; the Acetylene Plant; the Amine Plant; the Aniline I and II Plants; the EO/EG (ethylene oxide/ethylene glycol) Plant; the Glyoxal Plant; the MDI (methylenebis (phenylisocyanate)) 1 and 2 Plants; the PYR/NVP/PVP/PVP-I (vinylpyrrolidone/polyvinylpyrrolidone) Plants; the Polyol Plant; the Surfactants Plant; the TDI (toluene diisocyanate) Plant; and the Utilities Plant.

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The PYR/NVP/PVP/PVP-I Plants currently operate under Part 70 Operating Permit No. 2039-V0 issued on April 11, 2002. This Part 70 operating permit addresses the PYR/NVP/PVP/PVP-I Plants only.

BASF Corporation - Geismar Site is a designated Part 70 source. Part 70 permits have been issued to all of the operating units within the Geismar Site. These include:

Permit No.	Unit or Source	Date Issued
2028-V3	Specialty Amines Complex	12/23/2005
2039-V0	NVP/PVP Plants	4/11/2002
2094-V1	Glyoxal Plant	7/13/2006
2265-V4	Utilities Plant	11/22/2000
2334-V0	MDI 1 Plant	6/05/2006
2427-V1	Polyol Plant and Chlorine/Caustic Unloading	7/07/2006
2459-V3	Ethylene Oxide/Ethylene Glycol Plant	3/30/2006
2526-V2	Acetylene Plant	6/19/2006
2558-V1	Aniline 1 and 2 Plants	10/18/2006
2559-V4	MDI 2 Plant	8/03/2007
2564-V2	Boilers No. 3 and No. 6	5/01/2007
2582-V2	Surfactants Plant	6/29/2005
2643-V1	TDI Plant	12/04/2007

In addition, the Geismar Site continues to operate under PSD Permit No. PSD-LA-523(M-1) issued on September 12, 1987 for the Cogeneration Unit No. 1 and PSD Permit No. PSD-LA-613 issued on December 30, 1997 for the Cogeneration Unit No. 2.

III. PROPOSED PROJECT/PERMIT INFORMATION

Application

A permit application dated October 12, 2006 was submitted by BASF requesting a Part 70 operating permit for the PYR/NVP/PVP/PVP-I Plants. Additional information dated December 28, 2007 was submitted through a permit application addendum, Addendum No. 1, but it was rescinded by BASF on February 8, 2008.

Process Description

The PYR/NVP/PVP/PVP-I Plants consist of production facilities to produce pyrrolidone and vinyl pyrrolidone through continuous processes, and polyvinylpyrrolidone products through batch processes.

Pyrrolidone (PYR) is produced by reacting butyrolactone with ammonia. The pyrrolidone is then reacted with acetylene in the presence of potassium hydroxide to form vinylpyrrolidone (NVP). NVP is reacted in the presence of additives and

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initiators to form a number of different types of copolymers and polyvinylpyrrolidone (PVP) products in batch processes. These products are spray dried or transferred to trucks or drums for transport.

Proposed Permit

Permit 2039-V1 will be the renewal and minor modification of Part 70 operating permit 2039-V0 for the PYR/NVP/PVP/PVP-I Plants.

In addition to this permit serving as a Part 70 Operating Permit renewal, BASF Corporation (BASF) is proposing minor modifications to its current Part 70 permit in order to increase production rates and to make necessary changes to operating conditions. Also, minor revisions have been made to the General Condition XVII emissions and to the Insignificant Activities list

Permitted Air Emissions

Estimated emissions in tons per year are as follows:

Pollutant	Before	After	Change
PM ₁₀	7.25	8.48	+ 1.23
SO ₂	0.004	0.01	+ 0.006
NO _x	0.79	1.15	+ 0.36
CO	4.28	6.23	+ 1.95
VOC*	28.93	31.62	+ 2.69

***VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs):**

Pollutant	Before	After	Change
Acetaldehyde ¹	0.86	1.18	+ 0.32
Formaldehyde	0.001	0.001	0.00
n-Hexane	0.01	0.02	+ 0.01
Vinyl Acetate	0.17	0.13	- 0.04
Triethylamine	1.48	1.57	+ 0.09
Total	2.52	2.90	+ 0.38

¹ Highly Reactive Volatile Organic Compound (HRVOC)

Other VOC		28.72	
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Non-VOC LAC 33:III.Chapter 51 Toxic Air Pollutants (TAPs):			
Pollutant	Before	After	Change
Ammonia	7.83	9.96	+ 2.13
Chlorine	0.02	0.02	0.00
Sulfuric Acid	0.002	0.00	- 0.002
Total	7.85	9.98	+ 2.13

IV REGULATORY ANALYSIS

The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are also provided in the Specific Requirements section of the proposed permit.

Applicability and Exemptions of Selected Subject Items

TEMPO ID No:	Description	Requirement	Notes
UNF0003	PYR/NVP/PVP/PVP-I Plants	40 CFR 63 Subparts F & G National Emission Standards for Organic Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry (SOCMI) - HON	DOES NOT APPLY. The PYR/NVP/PVP/PVP-I Plants are not SOCMI facilities per 40 CFR 63.100(b).
EQT0582	1-90 NVP Water Scrubber	LAC 33:III.2115 Control of Emission of Organic Compounds – Waste Gas Disposal	EXEMPT. The final vent gas stream has a combined weight of VOC less than 100 pounds in any continuous 24-hour period. [LAC 33:III.2115.H.1.c]
		40 CFR 63 Subpart FFFF National Emission Standards for Hazardous Air Pollutants (NESHAP): Miscellaneous Organic Chemical Manufacturing (MON)	DOES NOT APPLY. Continuous process vents routed to this source do not contain any organic hazardous air pollutants (OHAPs).

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TEMPO ID No:	Description	Requirement	Notes
EQT0587	2-90 PYR/NVP/PVP Plants - Flare	40 CFR 63 Subpart FFFF National Emission Standards for Hazardous Air Pollutants (NESHAP): Miscellaneous Organic Chemical Manufacturing (MON)	After the compliance dates specified in 40 CFR 63.2445 of Subpart FFFF, the Permittee is in compliance with the provisions of 40 CFR 63 Subpart FFFF for any storage tank that is assigned to an MCPU and that has a fixed roof, closed-vent system, and control device in compliance with the provisions of 40 CFR 60 Subpart Kb, except that the Permittee must must comply with the monitoring, recordkeeping, and reporting requirements in 40 CFR 63 Subpart FFFF. For any equipment, emission stream, or wastewater stream subject to the provisions of both 40 CFR 63 Subpart FFFF and another rule, the Permittee also must identify the subject equipment, emission stream, or wastewater stream, and the provisions with which the Permittee will comply, in the notification of compliance status report required by 40 CFR 63.2520(d). Subpart FFFF. [40 CFR 63.2535(c)]
EQT0593 EQT0594	2-90(h) TK-591 Multi-purpose Storage Tank 2-90(i) TK-592 Vinyl Acetate Tank	40 CFR 60 Subpart Kb Standards of Performance for Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 40 CFR 63 Subpart FFFF NESHAP: Miscellaneous Organic Chemical Manufacturing (MON)	Comply with the closed vent system and control device requirements of 40 CFR 60.113b(3)(ii). These tanks vent to the flare (Source ID No. 2-90) which has a control efficiency greater than 95%. Comply with the Group 1 storage tank requirements of 40 CFR 63.2470 by venting emissions through a closed vent system to a flare.

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TEMPO ID No:	Description	Requirement	Notes
EQT0598	5-90 PVP Spray Dryer Scrubber	LAC 33:III.2115 Control of Emission of Organic Compounds – Waste Gas Disposal	DOES NOT APPLY. This Section does not apply to waste gas streams that are required by another federal or state regulation to implement controls that reduce VOC to a more stringent standard than would be required by this Section. [LAC 33:III.2115], [LAS 33:III.2149.A.1] This source is subject to LAC 33:III.2149
		LAC 33:III.2149 Limiting VOC Emissions from Batch Processing	CONTROL REQUIREMENTS DO NOT APPLY. The process vents associated with batch operations contain less than 500 ppm(v) total VOC and therefore do not meet the definition of <i>Process Vent</i> as defined in LAC 33:III.2149.B.
		40 CFR 63 Subpart FFFF NESHAP: Miscellaneous Organic Chemical Manufacturing (MON)	CONTROL REQUIREMENTS DO NOT APPLY. Total uncontrolled OHAP emissions are less than 10,000 lbs/yr. Therefore, this source meets the definition of a <i>Group 2 batch process vent</i> as defined in 40 CFR 63.2550. However, recordkeeping and reporting requirements do apply.
EQT0599	6-90 PVP-I Scrubber	LAC 33:III.2115 Control of Emission of Organic Compounds – Waste Gas Disposal	DOES NOT APPLY. This Section does not apply to waste gas streams that are required by another federal or state regulation to implement controls that reduce VOC to a more stringent standard than would be required by this Section. [LAC 33:III.2115], [LAS 33:III.2149.A.1] This source is subject to LAC 33:III.2149

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(continued) EQT0599	6-90 PVP-I Scrubber	LAC 33:III.2149 Limiting VOC Emissions from Batch Processing	EXEMPT. Any batch process vent stream for which an existing combustion device or recovery device is employed to control VOC emissions is assumed to meet the 90% reduction requirement until the combustion device or recovery device is replaced for any reason. Such units are exempt from any monitoring, recordkeeping, and reporting requirements under this Subchapter. [LAC 33:III.2149.A.2.c]
		40 CFR 63 Subpart FFFF NESHAP: Miscellaneous Organic Chemical Manufacturing (MON)	CONTROL REQUIREMENTS DO NOT APPLY. Total uncontrolled OHAP emissions are less than 10,000 lbs/yr. Therefore, this source meets the definition of a <i>Group 2 batch process vent</i> as defined in 40 CFR 63.2550.
FUG0024	9-90 PYR/NVP/P/PVP-I Plants - Fugitive Emissions	LAC 33:III.2111 Control of Emission of Organic Compounds - Pumps and Compressors	All pumps and compressors handling VOCs having a true vapor pressure of 1.5 psia or greater shall be equipped with mechanical seals.
		LAC 33:III.2121 Control of Emission of Organic Compounds - Fugitive Emission Control	DOES NOT APPLY. The PYR/NVP/PVP/PVP-I Plants do not meet the definition of a SOCMI facility as defined in LAC 33:III.111.
		LAC 33:III.2122 Control of Emission of Organic Compounds - Fugitive Emission Control for Ozone Nonattainment Areas and Specified Parishes	DOES NOT APPLY. The PYR/NVP/PVP/PVP-I Plants do not meet the definition of a SOCMI facility as defined in LAC 33:III.111.

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TEMPO ID No:	Description	Requirement	Notes
(continued) FUG0024	9-90 PYR/NVP/P/PVP-I Plants – Fugitive Emissions	LAC 33:III.5109 Comprehensive TAP Emission Control Program – Emission Control and Reduction Requirements and Standards	Control emissions of toxic air pollutants to a degree that constitutes Maximum Achievable Control Technology (MACT) as approved by DEQ. Emits Class III TAPs only. MACT is not required
		40 CFR 60 Subpart VV Standards of Performance for Equipment Leaks of VOC in SOCMI	DOES NOT APPLY. The PYR/NVP/PVP/PVP-I Plants are not SOCMI facilities. Therefore, they are not affected facilities as specified in 40 CFR 60.480(a)(1) and are not regulated by this Subpart.
		40 CFR 61 Subpart V National Emission Standard for Equipment Leaks (Fugitive Emission Sources)	DOES NOT APPLY. This source does not emit any volatile hazardous air pollutant (VHAP) for which a standard under this Part has been promulgated. [40 CFR 61.240(a)]
		40 CFR 63 Subpart FFFF NESHAP: Miscellaneous Organic Chemical Manufacturing (MON)	Permittee shall comply with the requirements of 40 CFR 63 Subpart H and the requirements referenced therein, except as specified in 40 CFR 63.2480(b) and (d). Subpart FFFF. (Applies only to components in OHAP service (> 5% by weight total organic HAPs) in the PVP Plant. The PVP Plant is the only plant in this permit that is subject to 40 CFR 63 Subpart FFFF. [40 CFR 63.2480(Table 6)]

Prevention of Significant Deterioration/Nonattainment New Source Review

Changes in potential emissions as a result of the minor modifications proposed in the October 2006 submittal are minimal. Therefore, the New Source Review (NSR) and Prevention of Significant Deterioration (PSD) programs do not apply.

Streamlined Equipment Leak Monitoring Program

The PYR/NVP/PVP/PVP-I Plants do not operate under a streamlined equipment leak monitoring program. The PVP Plant must comply with the fugitive requirements of 40 CFR 63 Subpart H per Subpart FFFF.

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Air Quality Analysis

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Air Quality Standard (NAAQS)
N/A			

Impact on air quality from emissions from the PYR/NVP/PVP/PVP-I Plants is below the National Ambient Air Quality Standards (NAAQS) and the Louisiana Ambient Air Standards (AAS) beyond industrial property.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

V. PERMIT SHIELD

BASF Corp. did not apply for a permit shield.

VI. PERIODIC MONITORING

Periodic monitoring is required for certain sources in this permit. All periodic monitoring shall be conducted in accordance with state and federal regulations, as applicable. See the Facility Specific Requirements of the draft Part 70 permit for monitoring requirements.

VII. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental

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impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide (H_2S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C (“Prevention of Significant Deterioration of Air Quality”) and D (“Nonattainment New Source Review”).

Nitrogen Oxides (NO_x) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10} – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

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Sulfur Dioxide (SO₂) – An oxide of sulfur.

Sulfuric Acid (H₂SO₄) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.